

Appendix 7. Overview of wearables used in included validation studies.

Model (Manufacturer)	Type	Memory/ Battery life	Feedback display (yes/no)	Epoch- length	Dynamic range [g]	Sampling frequency [Hz]	Dimensions (W x D x H) [mm]	Weight [g]	Used in No. Studies
3dNX accelerometer model v2 (BioTel Ltd., Bristol, UK)	Research-grade triaxial accelerometer	NR ¹	No	NR	NR	100	125 x 58 x 8	93	1
3dNX accelerometer model v3 (BioTel Ltd., Bristol, UK)	Research-grade triaxial accelerometer	Approx. 21 days	No	5-60 sec	± 5.5	100	54 x 54 x 18	70	1
Actical accelerometer (Philips Respironics, Inc., Murrysville PA, USA)	Research-grade triaxial accelerometer	NR	No	1, 2, 5 sec	NR	32	28 x 27 x 10	17	3
ActiGraph AM7164 (MTI Health Services, Florida, USA)	Research-grade uniaxial accelerometer	32 MB/4 days	No	10 sec	0.05-2.13	10	51 x 41 x 15	37.8	5
ActiGraph GT1M (ActiGraph, LLC, Pensacola, FL, USA)	Research-grade uniaxial accelerometer	1 MB/14 days	No	5 sec	0.05-2	30	38 x 37 x 18	27	7
ActiGraph GT3X (ActiGraph, LLC, Pensacola, FL, USA)	Research-grade triaxial accelerometer	2 GB/31 days	No	1-60 sec	0.05-2	30 – 100	38 x 37 x 18	27	3
ActiGraph GT3X+ (ActiGraph, LLC, Pensacola, FL, USA)	Research-grade triaxial accelerometer	2 GB/31 days	No	1-60 sec	± 6	30 – 100	46 x 33 x 15	19	10
ActiGraph GT9X (ActiGraph Inc, Pensacola, FL, USA)	Research-grade triaxial accelerometer	4 GB/16 days	Yes	1-60 sec	± 8	30 - 100	35 x 35 x 10	14	2
Actiheart (CamNtech, Cambridge, UK)	Research-grade triaxial accelerometer	1 GB/21 days	No	15, 30, 60 sec	± 2.5	100	39.7 x 30.2 x 9.25	10.5	2
Actimaker EW4800P (Panasonic Electric Works Co., Ltd, Osaka, Japan)	Research-grade uniaxial accelerometer	180 days	No	60 sec	0-2	20	60 x 35 x 13	24	1
ActivPAL (PAL Technologies Limited, Glasgow, UK)	Research-grade triaxial accelerometer	16 MB/10 days	No	15 sec	± 2	20	50 x 35 x 7	15	3
ActiTrainer (ActiGraph, LLC, Pensacola, FL, USA)	Research-grade uniaxial accelerometer	4 MB/14 days	No	15 sec	0.25-2.5	30	50 x 40 x 15	45	1
Actiwatch activity monitor (Mini Mitter Company, Inc., Sunriver, OR, USA)	Research-grade uniaxial accelerometer	NR	NR	NR	NR	32	27 x 26 x 9	NR	1
Actiwatch Spectrum (Philips Healthcare, Andover, MA, USA)	Research-grade uniaxial accelerometer	1 MB/8 months	Yes	NR	0.5-2	32	48 x 37 x 14	30	2
Actiwatch-L (Mini Mitter Co., Inc., Respironics, Inc., Bend, OR)	Research-grade uniaxial accelerometer	64 KB/180 days	Yes	15 sec - 15 min	NR	32	29 x 37 x 11	16	2
Actiwatch-2 (Philips Respironics Inc., Murrysville, PA, USA)	Research-grade biaxial accelerometer	1 MB/30 days (at 1 min epoch)	No	NR	0.5-2	32	43 x 23 x 10	16	3
Actiwatch 64 (Mini-Mitter, Inc., Bend, Ore, USA)	Research-grade uniaxial accelerometer	64 KB/180 days	Yes	15 sec - 15 min	NR	32	29 x 37 x 12	16	1
Axivity AX3 (Axivity Ltd., York, UK)	Research-grade triaxial accelerometer	512 MB/30 days (with 12.5 Hz)	No	NR	± 16	12.5 - 3200	23 x 32.5 x 8.9	11	1
Caltrac accelerometer (Muscle Dynamics Fitness network, Torrance, CA, USA)	Research-grade uniaxial accelerometer	NR	No	NR	NR	NR	70 x 70 x 20	78	2

CSA accelerometer (Computer Science and Applications, Inc., Shalimar, FL, USA)	Research-grade uniaxial accelerometer	NR	No	NR	0.05-3.2	0.25-2.5	66 x 43 x 15	70	2
Dynaport ADL Monitor (McRoberts, Den Haag, Netherlands)	Research-grade triaxial accelerometer	10 MB/1 day	No	1-60 sec	14	32	125 x 95 x 34	295	1
Fitbit Charge HR (Fitbit Inc, San Francisco, CA, USA)	Consumer-grade triaxial accelerometer	30 days/5 days	Yes	NR	NR	NR	157.5-193-21 wide)	30	2
Fitbit Flex (Fitbit Inc, San Francisco, CA, USA)	Consumer-grade triaxial accelerometer	5 days/7 days	No	NR	NR	NR	32 x 12 x 10	14.6	1
Fitbit Zip (Fitbit Inc, San Francisco, CA, USA)	Consumer-grade triaxial accelerometer	7 days/6 Months	Yes	NR	NR	NR	28 x 35.5 x 9.65	8	2
Garmin Vivofit 1 (Garmin, Schaffhausen, Switzerland)	Consumer-grade triaxial accelerometer	> 1 year	Yes	NR	NR	NR	25.5 x 10	25.5	1
GENEActiv (ActivInsights Ltd., Cambridgeshire, United Kingdom)	Consumer-grade triaxial accelerometer	500 MB/45 days (at 10 Hz)	No	NR	± 8	1000	43 x 40 x 13	16	3
Kenz Lifecorder (Suzuken, Co., Ltd., Nagoya, Japan)	Research-grade triaxial accelerometer	200 days/6 months	Yes	5 sec - 10 min	0.06-1.94	32	72.5 x 41.5 x 27.5	60	1
Motionlogger Sleepwatch (Ambulatory Monitoring Inc., Ardsley, NY, USA)	Research-grade triaxial accelerometer	2 MB/30 days	Yes	1 sec - 10 min	NR	10	55 x 45 x 18	65	1
MovBand Model 2 (Movband, LLC, Brecksville, OH, USA)	Consumer-grade triaxial accelerometer	40 days	Yes	NR	2-8	NR	NR	NR	1
New Lifestyle NL-1000 (New Lifestyles, Inc., Lee 's Summit, MO, USA)	Consumer-grade uniaxial accelerometer	7 days (on instrument) /18 months	Yes	4 sec /min	NR	NR	63.5 x 38.1 x 22.2	31.2	2
Omron HJ-151 (Omron Healthcare, Inc., Bannockburn, IL, USA)	Consumer-grade uniaxial accelerometer	7 days (on instrument) /1 year	Yes	NR	NR	NR	53 x 25.8	35	1
Omron Walking Style Pro HJ-720IT (Omron Healthcare, Inc., Bannockburn, IL, USA)	Consumer-grade biaxial accelerometer	41 days/ approx. 6 months	Yes	NR	NR	NR	47 x 73 x 16	37	1
Omron Active Style Pro HJA-350IT (Omron Healthcare, Inc., Bannockburn, IL, USA)	Consumer-grade triaxial accelerometer	4 GB/ NR	Yes	10-60 sec	± 6	32	74x 46 x 34	60	1
Polar Active Watch (Polar Electro Oy, Kimpel, Finland)	Consumer-grade uniaxial accelerometer	21 days/4 days	Yes	30 sec	NR	0.3-4	NR	45	1
Polar A370 (Polar Electro Oy, Kimpel, Finland)	Consumer-grade accelerometer	60 hours /4 days	Yes	30 sec	NR	50	23.5 x 27 x 13.5	31.7-37.3	1
Polar Loop (Polar Electro Oy, Kimpel, Finland)	Consumer-grade triaxial accelerometer	4 Mb/6 days	Yes	NR	NR	NR	145-240 x 20	38	1
RT3 (Stayhealthy, Inc., Monrovia, CA, USA)	Research-grade triaxial accelerometer	21 days/ 8.5 days	No	1 - 60 sec	± 250	0.7 - 5000	71 x 56 x 28	65.2	1
SCA3000 (Murata Electronics)	Research-grade triaxial accelerometer	NR	No	NR	± 2	NR	NR	NR	1
SenseWear Pro 2 (BodyMedia, Inc., Pittsburgh, PA)	Consumer-grade biaxial accelerometer	NR/2 weeks	No	60 sec	NR	32	NR	NR	1
SenseWear Pro 3 (BodyMedia, Pittsburgh, PA, USA)	Consumer-grade biaxial accelerometer	NR/2 weeks	No	NR	± 2	NR	85 x 53 x 19	79	3

SenseWear Mini (BodyMedia, Pittsburgh, PA, USA)	Consumer-grade triaxial accelerometer	NR	No	NR	± 1	1	86 x 60 x 27	45.36	1
Sqord (Sqord, Inc, Durham, NC, USA)	Research-grade triaxial accelerometer	7 days/9 months	No	15 min	NR	NR	60 x 8 x 3	113	1
Tracmor_p (Philips DirectLife, Amsterdam, Netherlands)	Research-grade triaxial accelerometer	22 weeks/3 weeks	No	1 min	NR	20	32 x 32 x 5	12.5	1
Tracmor2 (Philips Research, Eindhoven, The Netherlands)	Research-grade triaxial accelerometer	21 days/NR	No	NR	NR	20	70 x 28 x 8	30	1
Tritrac-R3D (Professional Products, Madison, WI, USA)	Research-grade triaxial accelerometer	14 days/ NR	NR	1 - 15 min	0.05 - 6.3	0.1 - 3.0	120 x 65 x 22	170	4
Walk4Life MVP (Walk4Life, Inc., Plainfield, IL, USA)	Consumer pedometer	None/NR	Yes	NR	NR	NR	57 x 32 x 13	NR	2
Wristband (NR)	Consumer-grade triaxial accelerometer	10 days/approx. 10 days	Yes	NR	NR	NR	40.3 x 15.7 x 10.5	7	1
Yamasa EX-200 (Yamasa Watch & Clock Co., Ltd., Japan)	Consumer-grade triaxial accelerometer	NR/7 days	Yes	NR	NR	NR	60 x 33 x 11	20	1
Yamax Digi-Walker SW-701 (Yamax Corp., Tokyo, Japan)	Consumer-grade pedometer	None/3 years	Yes	NR	0.35-0.50	NR	50 x 38 x 14	21	1
Yamax Digiwalker SW-200 (Yamax Corp., Tokyo, Japan)	Consumer-grade pedometer	None/ 3 years	Yes	NR	0.35-0.50	NR	50 x 38 x 14	21	6
Zamzee (HopeLab non-profit organization, Redwood City, CA, USA)	Consumer-grade triaxial accelerometer	1 month /2 weeks	No	10 sec	NR	20	NR	NR	1

¹NR: not reported